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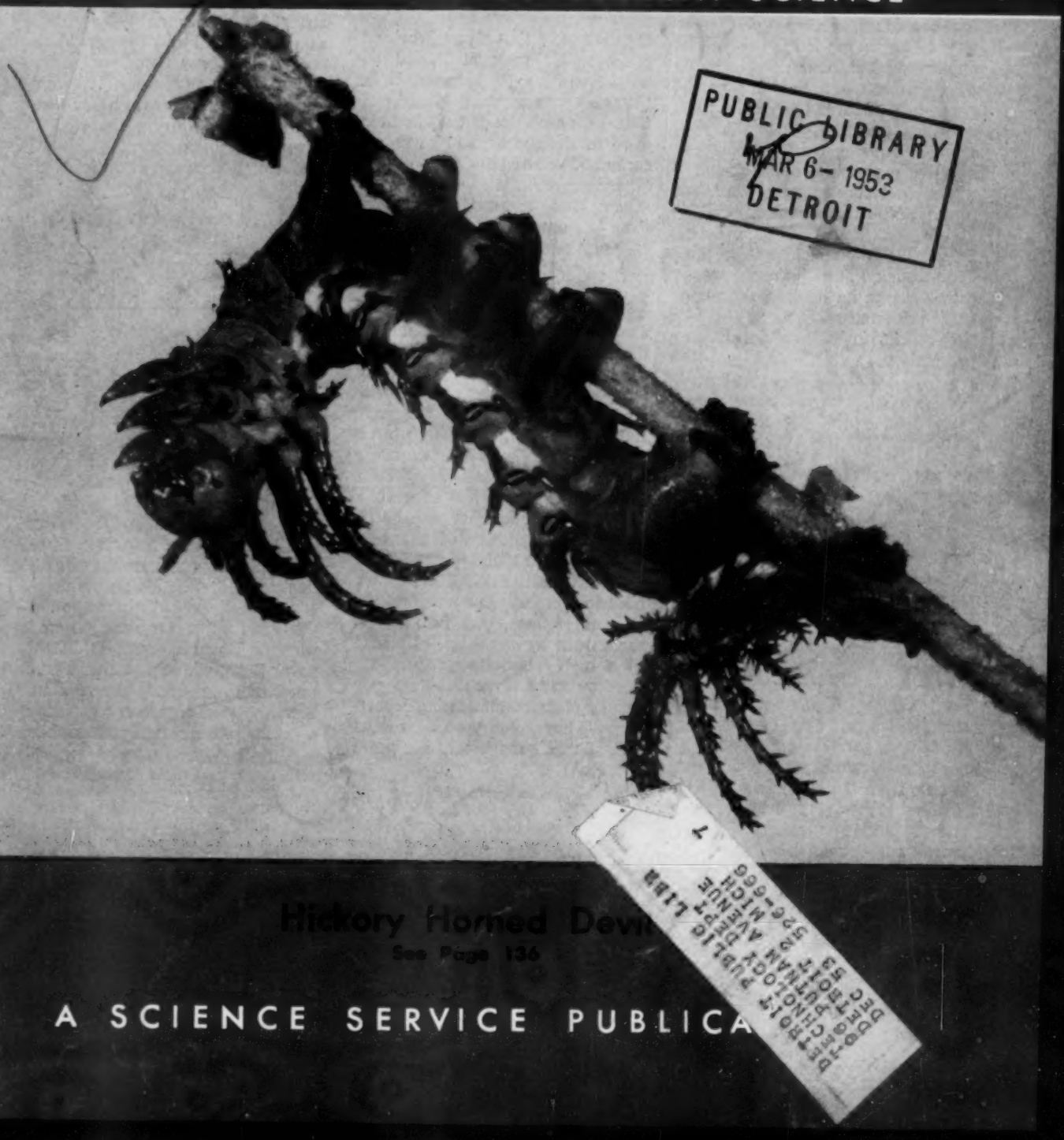
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Hickory Horned Devil

See Page 136

A SCIENCE SERVICE PUBLICA

Kodak reports to laboratories on:

processing your own 16mm film . . . determining bovine pregnancy . . . a fast blue-sensitive plate . . . a new method of supporting frozen tissue sections

16mm

One day in the early '20s a pair of Kodak research men reached the conclusion that sixteen millimeters would be a reasonable film width for reversal-processed non-theatrical movies. Presently "16mm" had imbedded itself into the technology of our age, adaptable alike to purposes of family sentiment, gaiety, art, instruction, promotion—and data-recording. Perhaps you too would like to use it for the latter application but have not realized that you don't have to wait for the postman to deliver the results. Be informed, then, that you can do reversal processing (and, of course, negative processing) of black-and-white 16mm film in your own laboratory. You use Kodak Super-X, Plus-X, or Super-XX Blue Base Reversal Film, which, unlike the Cine-Kodak Films, have no processing charge included in the purchase price and no black anti-halation backing to get rid of during the processing.

Information on processing Kodak Blue Base Reversal Films is available from Eastman Kodak Company, Sales Service Division, Rochester 4, N. Y.

To be reasonably sure

From *Country Gentleman* we have recently learned that one of our products is good for spotting pregnant cows. You permit a urine sample from the bossy in question to stand at room temperature, then add a saturated aqueous solution of *Indophenol Sodium Salt*. If green turns out to be the prevailing color note, rejoicing is in order. This method told the truth 91% of the time in one herd of 136 cows. All we know about it is what we read in *Country Gentleman* (September '52, p. 57).

Indophenol Sodium Salt *is just one of over 3500 Eastman Organic Chemicals. For a copy of our catalog, write Distillation Products Industries, Eastman Organic Chemicals Department, Rochester 3, N. Y.*

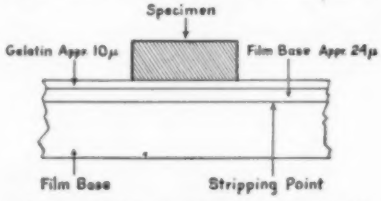
Fast, blue-sensitive plate

It might seem that a panchromatic photographic material should be more sensitive to tungsten light (3000 K) than a "color blind" one that quits with the end of the blue third of the spectrum. Not necessarily so. We make a plate of the latter category that is as fast as our famous Kodak Super Panchro Press Plate—as much as twice as fast for exposure times of the order of several hours. It's the Kodak Spectroscopic Plate, Type 103-0, admired by spectroscopists for its moderate, uniform sensitometric gradient all the way from 2400A to 4400A. Manufacture of these plates has been confined within the ivy-covered walls of our Emulsion Research Laboratory because the plates seemed to be of somewhat academic interest. We couldn't have been wronger. Lots and lots of people want high white-light sensitivity with the convenience of handling by reasonable safelight illumination (Kodak Wratten Series 2) and don't need to preserve tonal relationships in flesh, foliage, and fabrics. To serve them by immediate shipment of a highly uniform product, we have switched Type 103-0 to our regular plate manufacturing department. (They have ivy on their walls too, but their machinery has more capacity.)

Kodak Spectroscopic Plates are sold by the Kodak Industrial Dealer in your area. If he has not already been supplying them to you, your note to Eastman Kodak Company, Industrial Photographic Division, Rochester 4, N. Y., will bring full information and get your shipment moving to your dealer.

Frozen section

Having crowed at left about high photographic sensitivity, we are equally pleased to announce Kodak Frozen Section Stripping Film, which has no sensitivity whatsoever. As diagrammed below, it consists of 10 microns of plain soft gelatin on a 24-micron cellulose acetate film base atop a conventionally thick film base that serves as a strippable carrier until the thick film is removed and the gelatin is stuck to a frozen tissue section in the pathology laboratory. The thin cellulose acetate provides support for the tissue during the slicing stroke of the microtome, so that undistorted sections as little as 5



microns thick may be obtained with no extraordinary manipulative skill from fragile tissues such as fatty tumors, thyroid glands, and lymph nodes. If the gelatin is prestained with thionine or toluidine blue, the stain is transferred to the tissue section quite satisfactorily, giving a finished slide from a CO_2-frozen specimen in about a minute. Photography has nothing to do with all this unless and until a photomicrograph is required. This method is the work of a very famous and versatile friend of ours, Dr. Vannevar Bush, whom you hear about much more frequently as a research administrator, engineer, computing machine pioneer, and philosopher.

Kodak Frozen Section Stripping Film comes in unperforated 35mm strips 25 feet long. To find out about acquiring a roll, write Eastman Kodak Company, Industrial Photographic Division, Rochester 4, N. Y. The paper by Dr. Bush and Richard E. Hewitt, which gives details of the method, appears in The American Journal of Pathology, *1952, XXVIII, No. 5, pp. 863-873.*

This is one of a series of reports on the many products and services with which the Eastman Kodak Company and its divisions are . . . *serving laboratories everywhere*

Kodak
TRADE-MARK

TECHNOLOGY

Radar-Proof Plane

Jets made of reinforced plastic, Fiberglas coated with a Bakelite resin, would be almost completely electronically transparent. Mass production would be up to 80% cheaper.

A PLASTIC-TREATED material promises to make aircraft nearly radar-proof, to let supersonic planes fly even faster, and to slash airframe production costs by 80% by cutting down the need for skilled labor and high-priced equipment.

It even may revolutionize the present aircraft industry by pointing the way to future low-cost, high-performance plastic military bombers and supersonic fighters.

William E. Braham, chief engineer of the Zenith Plastics Co., Gardenia, Calif., told SCIENCE SERVICE that some experimental aircraft parts already have been molded of the new plastic material and have been tested successfully by his company.

Subsequent experiments showed the material is "almost completely electronically transparent." Mr. Braham, who supervised design of Lockheed's first giant Constellation transport, explained that most radar waves go right through the plastic. A small percentage is absorbed by the material. Practically none are reflected into the searching eye of a radar set.

This means that the radar target is reduced from a whole airplane to a few radar-wave-reflecting metallic parts such as would be found in the engine. The probing eye of radar would have to look pretty hard to spot a plane or guided missile made of the reinforced plastic, he said.

The material used in the laboratory tests, and which is also spotted here and there in current military aircraft, is Fiberglas coated with Bakelite plastic resins. The material offers a solution to design and high-temperature problems of supersonic aircraft, Mr. Braham reported to the Society of the Plastics Industry meeting in Washington.

High temperatures have less effect upon the reinforced plastic, as it is called, than on light metal alloys. Thus the material offers glittering promise to design engineers creating the supersonic aircraft that will be the planes of tomorrow.

Heat generated by friction when airplanes ram through air at supersonic speeds is a real problem. A plane flying 1,300 miles an hour at sea level may get as hot as 300 degrees Fahrenheit in spots. Above that temperature, the strength of aluminum alloys falls off rapidly, making the plane less reliable.

The new material, however, can withstand temperatures as high as 500 degrees Fahrenheit without sacrificing an appreciable amount of strength. Certain types of glass cloth treated with the new resin do not bend under load any more than aluminum or magnesium alloys when put on an equivalent weight basis. The plastic material is lighter than aluminum.

The economic secret of the material lies in its simplicity. Molds of wing sections or even fuselage sections are made first. Then the glass fiber is strewn over the mold in the proper thickness. The fiber is impregnated with the plastic resin and is allowed to set. This is repeated until the part takes the proper size.

All of this can be done by men who can be trained in a week to do an expert job of it. Little expensive equipment is needed.

The result is a tough substance that not only plays hide-and-seek with radar and that resists withering temperatures, but also one that is immune to corrosive effects of sea water, air, high humidities, aircraft fuels, hydraulic fluids and lubricating oils.

Mr. Braham envisions the day in the near future when whole wings and fuselages will be made by the revolutionary process. He estimated the economics of the material would cut structural design manhours 80%. A similar saving in production time seems likely. Giant assembly plants should shrink to a more reasonable size.

All this will be accompanied by a superior product, he believes. And with new Bakelite resins currently being developed, possibly airframe design and manufacturing costs will be cut even further.

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BACTERIOLOGY

Flu Germ Found More Complex Than Imagined

THE INFLUENZA germ, or virus, is a complex one. When it gets into the cells of your body, it forms something scientists call elementary or inclusion bodies.

Each of those 'flu virus elementary bodies, far too small to be seen even with the most powerful light microscopes, consists of an aggregate of smaller units, several scientists have theorized from the behavior of the virus.

Now proof, or at least "support," for this theory is presented through electron microscope studies by Dr. L. Hoyle of the Public Health Laboratory at Northampton, England, and Drs. R. Reed and W. T. Astbury of the University of Leeds.

With this microscope, the scientists have found particles that carry the red blood cell agglutinating fraction of the influenza virus, and also particles that carry the complement-fixing antigen of the virus. Each particle is about 120 angstrom units in size, one angstrom unit being four billionths of an inch. The studies are reported in *Nature* (Feb. 7).

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***NAVY'S FLYING SUIT**—Latest entry in the battle to keep humans alive in the frigid, nearly airless heights above 50,000 feet is this full pressure flying suit developed for the U. S. Navy.*

PHYSICS

Heat Measuring Device

➤ A NEW heat measuring device so sensitive that it can detect one hundred-millionth of the heat given off by a 100-watt light bulb in an hour has been developed at the University of Chicago's Institute for the Study of Metals.

The device, called a microcalorimeter, was developed by Dr. Paul Gordon to study small amounts of heat given off by metals. It can detect temperature changes of three ten-thousandths of a degree Centigrade. The microcalorimeter differs from a thermometer in that it measures the total heat given off by an object, not merely its temperature.

It consists of two basic parts. One is an apparatus for maintaining a constant temperature around the object whose heat is being measured. For this purpose, Dr. Gordon uses a vaporthermostat. In this, the boiling, evaporating and condensing cycle of a fluid keeps a constant temperature at the boiling point of a liquid around the object. Dr. Gordon uses methyl benzoate to keep the temperature constant to three ten-thousandths of a degree Centigrade by the vaporthermostat.

The second part of the microcalorimeter is made of the actual heat-measuring device. This is a tall, insulated cylindrical chamber in which the metal sample to be measured is placed. Inside the cylinder is a thermopile, made up of 20 individual thermocouples of iron and the alloy constantan.

The temperature difference between one part of the thermopile, which reflects the constant temperature of the vaporthermostat, and the other, which reflects the temperature of the sample, induces a minute electric current.

The magnitude of this current is a measure of the heat flow from the sample. The latter is a hollow metal bead about an inch long. The minute amounts of heat Dr. Gordon measures result from the growth of grains in the metal as its structure changes, or from very small amounts of heat remaining in the metal after it is cold worked.

By measuring these amounts of heat, Dr. Gordon is analyzing certain aspects of basic structural changes within metals that affect their properties.

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BIOLOGY

More Babies Without Papa

➤ IF RODENTS were men—or rather, women—the latest sex news would be causing consternation.

For there are now four authentic cases of a rodent mamma having babies, then having still another batch of babies without the mamma even seeing the papa after the first birth occurred.

All this happened in a laboratory, and under the watchful eye of a scientist.

Dr. Florence L. Evans, microbiologist with the Baylor University College of Medicine, Houston, Tex., reported the cases of a white rat, two mice and a guinea pig who gave birth to two successive litters of young without having been bred a second time.

The white rat, typical of the four cases, was removed from a cage containing males when she was obviously pregnant. Two days later she gave birth to a litter of eight healthy young. You would think she had done enough; but 25 days later, although she had been completely separated from males all the while, she had a second litter, with 11 young.

Similar births were observed with two mice of different species and with a guinea pig, Dr. Evans said.

What is responsible for these unusual births? Dr. Evans rules out the likelihood of parthenogenesis, or "virgin birth," because offspring were of mixed sexes. Offspring from parthenogenetic birth could only be of one sex.

There are two probable explanations, Dr. Evans said: (1) several of the very early embryos (blastocysts) failed to become implanted in the uterus wall until after the first litter had developed; (2) the embryos, although attached and growing on the uterus wall, developed at different rates.

Chances are, Dr. Evans said, that a combination of the two may account for the observed results. Thus, blastocysts of the second litter did not become attached to the uterus wall until later in pregnancy, and so were not fully developed until after the first litter was born.

Her report was made in *Science* (Feb. 13).

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INVENTION

Salt Water Freshener Becomes Fire-Retardant

➤ THE SAME sort of stuff that makes salt water fresh and hard water soft can make cloth, wood and wood products fire-retardant.

Such is the claim in a patent for a new fire-retardant substance granted to Dr. Walter Juda and Grinnell Jones, Cambridge, Mass., and Nathaniel Altman, Kew Gardens, N. Y. Dr. Juda has also invented a method of turning salt water into fresh water through the process of ion exchange.

In ion exchange, calcium salts in the water are exchanged for other, less harmful materials with the same electrical charge by trickling water through resinous materials.

Dr. Juda and his associates use the same resinous materials to produce the fire-retardant substance. It is the result of a reaction of basic, nitrogen-containing anion-exchange resins with non-oxidizing, inorganic acids, such as phosphoric acid.

Such products, the inventors say, are substantially non-flammable at flame temperatures of about 1,380 degrees Fahrenheit, and possess excellent fire-retarding and potentially heat-insulating properties. The substance is coated on or impregnated in such materials as fabrics, paper, wood, cardboard, wallboard and fiberboard.

Patent number is 2,628,946. It has been assigned to Albi Manufacturing Co., Inc.

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TECHNOLOGY

Biggest Snow Plow Throws Snow 800 Feet

➤ THE WORLD'S largest snow plow, which the armed forces soon may use to clear snowbound Arctic airstrips, proved its snow-worthiness recently in Michigan tests.

The "Drake Dreadnaught" 30-ton plow ate its way at 35 miles an hour through a fluffy four-inch snowfall covering the Grayling National Guard Airport. It cleared the 6,300-foot runway in less than seven minutes, throwing the snow 800 feet away. It cut a 31-foot swath with each pass.

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GENERAL SCIENCE

Russian Journals Now Easier to Obtain in U. S.

➤ THE RUSSIANS are easing up on their ban against exporting magazines, scientific and otherwise, from their nation.

Only 180 Soviet periodicals were available in this country in 1952. This year about 300 can be purchased. They are available through the Four Continent Book Corp., a Soviet agency in New York which has a practical monopoly on all Soviet publications exported to this country.

Subscription service on many of these publications was interrupted in 1951 and 1952. Now, for some reason, such service will be resumed. Among scientific journals once more available are those in the fields of biology, mathematics, geography, geology, geophysics, physics, technical sciences and chemistry.

However, the two main Russian journals of physics, the *Journal of Experimental and Theoretical Physics* and the *Journal of Technical Physics,* are still not exported. And no publication dealing with nuclear physics has ever been exported.

This information is reported in the *Bulletin of Atomic Scientists* (Feb.).

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PHYSICS

Test A-Bombs Do Not Contaminate Country

➤ DO NOT worry about the atomic test explosions in Nevada contaminating the atmosphere and the ground unduly.

An extensive investigation by Atomic Energy Commission experts cooperating with the U. S. Weather Bureau shows the dose of radiation is minute, although background radiation does increase markedly even thousands of miles from the bomb-bursts. But this is for brief periods only and the long-lived radioactivity is much less than the natural activity of the earth's surface and atmosphere.

Merril Eisenbud and John H. Harley of the AEC New York Operations Office made this report in *Science* (Feb. 13).

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GIANT SNOW PLOW—A possible answer to the problem of snowbound airport runways is the "Drake Dreadnaught" shown here. Cutting a 31-foot swath, it removes 13,000 cubic feet of snow a minute from its path.

ARCHAEOLOGY

First Folsom Man Rib

First known bone of elusive Folsom Man, heretofore spotted only by his distinctive flint points and his camp sites, found in clay deposit in New Mexico.

➤ THE MYSTERY of one of America's oldest inhabitants, the Folsom Man of 10,000 B. C., is about to be solved. After 27 years of searching, an almost complete human rib has been unearthed in a blue clay deposit in New Mexico—the first-known bone of a Folsom man.

Anthropologists believe that this bone is the long-sought clue to the physical constitution of the race of man widely known from his uniquely-shaped flint points and camp sites.

The actual find was made by a postman, Oscar Shay, of Portales, N. Mex., at Blackwater Draw, near Portales. He took the bone to Dr. Frank C. Hibben of the University of New Mexico, an authority on Folsom Man, who dated the rib by the clay where it was found.

What the early Folsoms did with their dead has remained a mystery, for out of the tons of bones that have been found at their camp sites since 1926, not a single fragment of human bone has come to light.

Blackwater Draw was a watering place for bison and other long-extinct animals, and the Folsom Man may have been killed in combat with one of the huge beasts.

The human rib was found near the spot where, last summer, Mr. Shay and Jerry Ainsworth found the skeleton of a dire wolf, a ferocious species that weighed up to 400 pounds. The skeleton had a fluted point in its ribs, a longer and narrower variation of the points associated with Folsom Man.

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ENTOMOLOGY

Apaches Threaten California Farmers

➤ THE APACHES are making life miserable for farmers and other outdoor workers in California.

In this instance the Apaches are not Indians, but Apache wasps, a species that builds its nest on tree limbs, vines or wood supports.

As field workers disturb the nests, the wasps fly out and sting, Richard M. Bohart, associate professor of entomology of the University of California, College of Agriculture, Davis, reports. Unlike a honeybee, a wasp can sting more than once if the stinger is not pulled out.

Prof. Bohart's tests in the field show that lindane or DDT sprays will kill the wasps.

Like many pests in new areas, the Apache wasps have multiplied rapidly in the absence of natural enemies. The wasps apparently came from Texas or Arizona.

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NUTRITION

End Forced Beef Grading

Government booklet telling how beef is graded and how to get the most for a beef dollar may become a best seller since mandatory grading of meat is no longer in effect.

➤ AFTER TEN years of relying on compulsory meat grading by the government, harassed consumers are now thrown on their own by the end of mandatory grading along with price controls on meat. They may turn a little 22-page government bulletin overnight into a best seller.

This booklet, "Beef—Facts for Consumer Education," by the U. S. Department of Agriculture, tells how beef is graded, how consumers can tell one grade from another, what the standard retail cuts of beef are, and how to get the most for their beef dollar.

Wise meat sellers may even distribute this booklet to their customers, to protect themselves against unfair competition from unethical dealers trying to pass off low-grade beef at high-grade prices.

The demise of price controls on meats meant OPS-sponsored mandatory grading died too. All government meat grading did not end, however. Packers and dealers can still request government inspection of their products. But consumers can expect to see much less of the shield enclosing the letters "USDA" and the grade name—prime, choice, or good—stamped on their meats.

Sanitary inspection of meats in interstate commerce, of course, is still in full force.

Now that you must do your own grading, here are some highlights from the bulletin to help you choose your beef wisely:

There are seven grades of beef, probably only three of which you will be choosing from. The first of these, "prime," comes from young, well-fed, beef-type cattle. The lean meat is bright red, firm, and with a liberal portion of fat. Prime cuts are especially juicy, tender and well-flavored.

"Choice" beef is the most popular grade. It contains less fat than prime cuts, but is tender and high in eating quality. "Good" beef has less fat than either prime or choice cuts, and is not as tender or juicy.

The remaining four grades—commercial, utility, cutter and canner—are lacking in fat, tenderness and juices, and usually come from older animals. The last two are used chiefly for canning, sausage and dried beef.

The Federal grades are based on three factors: conformation, or general body proportions and ratio of meat to bone; finish, the amount and distribution of fat; and quality, concerned with texture and color of lean and fat, and color and character of bone.

Higher grade beef has a higher percentage of meat to bone. Lean should be bright red in color and of a fine texture, and well-marbled with fat.

Meat from young animals will be tenderest, and red, porous bone is a good indication of young age.

The booklet "Beef—Facts for Consumer Education," Agriculture Information Bulletin No. 84, can be obtained from the U. S. Government Printing Office, Washington 25, D. C., for 15 cents.

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MEDICINE

Germs Resist New TB Drug, But Lose Virulence

➤ MORE GOOD news about isoniazid, or INH, new anti-tuberculosis drug: Some germs become resistant to it, but they have lost their virulence so they do not produce disease. This was reported by Dr. William Steenken of Saranac Lake, N. Y., at the conference on tuberculosis held in Atlanta, Ga., under the auspices of the Veterans Administration.

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• RADIO

Saturday, March 7, 1953, 3:15-3:30 p.m., EST.

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Warren Weaver, director for the natural sciences and agriculture of the Rockefeller Foundation, discusses "Supporting Scientific Research."

METEOROLOGY

Colder East, Normal West to March 15

➤ IT WILL be colder than usual during the first half of March in the eastern half of the nation, predicts Weather Bureau's Extended Forecast Section.

Exceptions to this are New England and the Gulf Coast regions where the temperatures during the next 30 days should be about normal. The Southwest should be warmer than usual, while the rest of the West can expect normal temperatures until March 15.

Warm weather in the Southwest will be accompanied by less rain than usual. The belt of subnormal precipitation will extend from Oklahoma and most of Texas westward to southern California. The Pacific Northwest and the Atlantic seaboard will get more rain than usual, while the rest of the nation can expect the usual amounts of precipitation until March 15.

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TECHNOLOGY

Water-Cooled Pillow

➤ THE GADGETS and new scientific developments that should make the future even more attractive were revealed in Boston at a display by companies affiliated with the American Research and Development Corp. They included these items:

1. A pedigreed English bloodhound with his sniffer trained to find leaks in big gas mains buried underground.

2. A water-cooled pillow pad that soothes your face on hot humid nights when sleep comes hard. The pad is placed beneath the pillowcase. A small electric pump keeps water moving through the pad. Since the water's temperature is lower than that of your face, the pad feels cool.

3. A detector of impending death that warns of danger after a person has undergone surgery or when he is suffering from severe shock. Called a flame photometer, the device actually measures salt content of the blood. If the salt content is abnormal, death may be near and effective remedies should be administered quickly. Because of its portability and high-speed decisions, the device now is being used to save life on Korean battlefields. Previous methods of measuring salt in the blood took hours—sometimes days.

4. A water demineralizer about the size of a kitchen refrigerator. The device works on electricity and can convert 200 gallons of brackish water into soft de-salted water in an hour. It uses about as much power as an electric iron. The device will not be widely available in the near future.

5. A comparator densitometer for spectrographic laboratories. The device measures the density of lines appearing on spectrographic plates. The resulting information can be related to the amount of a given element that appears in the sample being analyzed. This is the first time the densitometer has been exhibited in public.

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NUTRITION

Atomic Sterilization Planned for Future Food

➤ FOOD PRESERVED by atomic energy may be consumed by future populations. The University of Chicago is developing a substitute for freezing and for tin cans. The food would be sterilized by gamma rays from an atomic reactor by-product, cobalt 60, which has radiation so powerful that it would kill a mouse in 10 seconds

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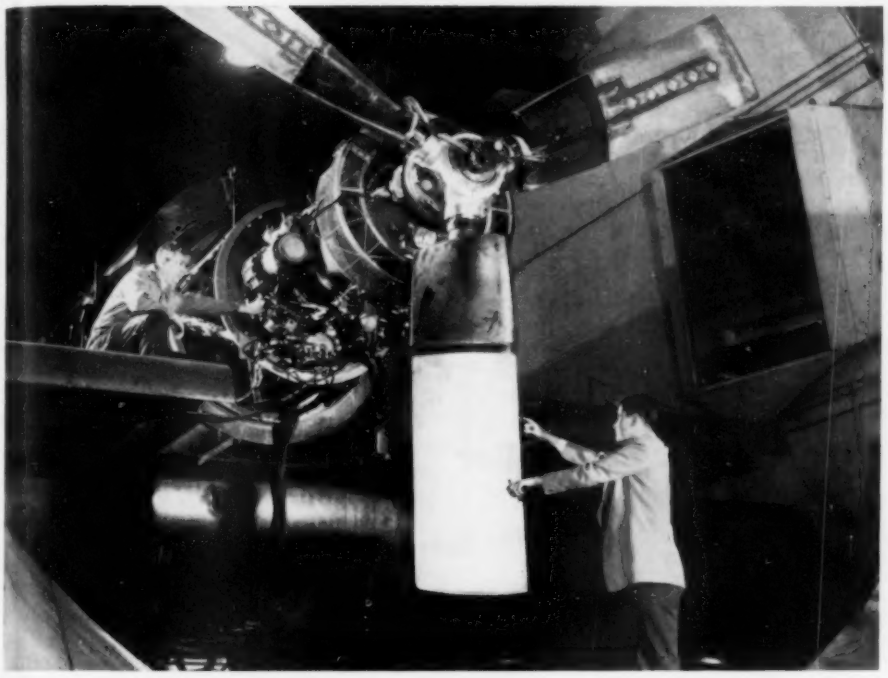

WIDE-BLADED PROPELLER—Engineers check the latest Hamilton Standard propeller on its final test run. Designed for the U. S. Navy, it has the widest blades of any propeller ever built.

PUBLIC HEALTH

Parrot Smuggling Danger

➤ POLLY THE Parrot and her brightly feathered relatives have been giving Uncle Sam's customs officers a hard time. They even gave one of the officers an attack of the life-threatening disease, parrot fever, or psittacosis.

Because of this disease, the U. S. Public Health Service has a quarantine regulation forbidding entry to this country of any bird of the parrot, or psittacine, family. This includes parakeets and love birds. Only exceptions are birds being imported by zoological parks, by institutions for medical research and, very occasionally, by a family that has been living abroad and had the bird for several years.

The quarantine regulation is enforced by Treasury Department customs officers. During the past year, reports Commissioner of Customs Frank Dow, large numbers of these birds were brought into Mexico from Belgium and Holland, intended for the lucrative United States market. The potentials of this illicit business have been estimated at as high as a quarter of a million dollars a year.

Runners, Mr. Dow explains, attempt to deliver the birds to confederates on the U. S. side of border at isolated points, or use trick cages concealed in automobiles moving through regular ports of entry.

Custom officers have seized thousands of birds and made scores of arrests to stop this smuggling. Birds valued at $30,000 were taken as a result of a single investigation in the San Diego, Calif., area. Texas border points also have been "hot spots" in the racket.

The outbreak of parrot fever starting in Florida about a year ago is believed to have come from smuggled birds.

Parrot fever is caused by a virus. It attacks the lungs and is marked by high fever. Birds other than the parrot family get the disease and pass it along to humans. There were 90 cases among workers in a poultry processing plant in Texas. In Pennsylvania there has been some indication that human cases came from canaries. Pigeons have also been found guilty of spreading this disease. It got its name from parrots, however, because it was to these birds that doctors first traced the human sickness.

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INVENTION

Patent Toy Gun To Blow Smoke Rings

➤ A TOY gun invented by Thomas M. Shelton, Glendale, Calif., blows smoke rings. Smoke is produced with a star-shaped cartridge, the points of which are coated with a smoke-producing material. The smoke goes into a smoke chamber and is emitted from the barrel in the form of rings. Patent number is 2,628,450.

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AERONAUTICS

Wide-Bladed Prop Slated To Power Navy Transport

➤ A NEW square-tipped, hollow, steel propeller having the widest blades ever built soon will be added to a U. S. Navy plane to step up take-off thrust of the engines and to raise flying performance of the plane.

Now in limited production at Windsor Locks, Conn., the propeller combines with a 5,500 horsepower Pratt & Whitney Aircraft T-34 turboprop engine to give more propulsive thrust for take-off than any other propeller-engine combination, reports Erle Martin, general manager of United Aircraft's Hamilton Standard division.

The Navy picked the propeller to power its R7V-2 turboprop version of Lockheed's Super-Constellation transport. Although the Navy says it does not have even a "guesstimate" of when the R7V-2 will take to the air, Mr. Martin said it should fly this year.

The propeller's hollow blades are supported internally by a steel core. A vulcanized synthetic sponge is packed into the air spaces to support the outer shell of the blades. The prop can be adapted to work on planes flying faster than 500 miles an hour driven by engines of more than 9,000 horsepower.

Science News Letter, February 28, 1953

MEDICINE

Drug Tells Early of Impending Toxemia

➤ TOXEMIA OF pregnancy, which takes an annual toll of 1,500 mothers' and 30,000 infants' lives, can be detected as early as the fifth month of pregnancy by a test announced by Dr. Nicholas S. Assali, University of Cincinnati College of Medicine.

The test is based on the finding that pregnant women need much less spinal anesthetic than non-pregnant persons, and that they are susceptible to fainting. The reason is that in normal pregnant women, particularly after the sixth month, the sympathetic nervous system becomes very active and takes over almost entirely control of blood pressure.

The new test consists in injecting a synthetic drug, tetraethylammonium chloride, or TEAC for short. This blocks the sympathetic nervous system, giving an effect similar to that of spinal anesthesia.

If there is a significant fall in blood pressure following this injection, toxemia is not likely to develop. If the blood pressure does not fall, it is possible the patient is heading for toxemia. This advance warning could enable obstetricians to take preventive measures, Dr. Assali said in reporting the test to the Obstetrical and Gynecological Assembly of Southern California meeting in Los Angeles.

The test has been used about 1,000 times, he said, and proved helpful in detecting toxemia in about 85% of the cases.

Science News Letter, February 28, 1953

GENETICS

Female Tongues Do Wag More Easily, Tests Show

➤ THE FEMALE of the species can wag her tongue with more facility than the male, new statistics show, backing up an opinion males have had for some time.

In a test of ability to roll and fold the tongue on 865 persons, Edward E. Gahres, geneticist at George Washington University, Washington, found that 3.7% of the females tested could both roll and fold their tongues, while only 1.9% of the males could do both.

Males, however, move into first place when it comes to rolling the tongue without being able to fold it, 71.6% against 70.3% for the fairer sex. Neither sex had the ability to fold the tongue without being able to roll it too.

Males are the most tongue-tied, winning this honor by one-half of one percent. Of the males tested, 26.5% could neither fold nor roll, while a mere 26.0% of the girls could do neither. Mr. Gahres reports his study in the *Journal of Heredity* (Sept.-Oct., 1952).

Science News Letter, February 28, 1953

INVENTION

Pretzels, Doughnuts And Ice Cream Cones

➤ PRETZEL TWISTING, doughnut forming and ice cream cone rolling are each the subject of recent patents.

Twisting a pretzel by machinery is a complicated matter. It takes 32 drawings on 17 sheets of paper to picture the machine adequately for Patent Office purposes. The inventor of this machine, Harrison S. Gipe, Reading, Pa., has patents on other pretzel machines issued years ago. This is essentially an improvement on the older machines.

Mr. Gipe says that on his old machines 30 pretzel forming units are required to produce approximately 160 pretzels per minute. In the new machine he puts his forming units on a revolving drum and now six forming units produce 120 pretzels per minute.

With his machine, the dough is cut into dough strips with a reciprocating knife, carried to a feeder by a conveyor and fed by gravity to individually actuating forming units on the surface of a drum, shaped to form pretzels in the units and then ejected from the drum.

The patent, number 2,628,577, was assigned to the Quinlan Pretzel Co., Inc., Reading.

Doughnuts are simpler matters. Ernest J. Roth, Rockleigh, N. J., has invented a machine which takes an irregular lump of dough and rolls it around a metal bar, thus shaping the doughnut.

Mr. Roth has assigned his patent, number 2,628,578, to the Joe Lowe Corp., New York.

With a new ice cream cone-rolling machine, the process of making a cone is a non-stop job. The dough is baked, flat in a griddle. All the time the griddle is moved along toward a position where it opens. The griddle is scraped, removing the flat wafer. The wafer then automatically is wrapped around the cone mold. Once it is shaped into the form of a cone, it is stripped from the mold and all you need is a scoop of ice cream. If you are a small boy—two scoops of ice cream.

Jacob S. Finke, University City, Mo., is the inventor and he received patent 2,628,576.

Science News Letter, February 28, 1953

ENTOMOLOGY

Largest U. S. Caterpillar Is Actually Harmless

See Front Cover

➤ THE LARVAL form of the regal moth, *Citheronia regalis,* is the largest caterpillar in the U. S., growing up to five inches in length. Although it is called the hickory horned devil, this spined caterpillar is quite harmless. It is shown on the cover of this week's SCIENCE NEWS LETTER. It feeds on the leaves of hickory, walnut and other hardwood trees.

Upon metamorphosis, this caterpillar becomes the adult regal moth, largest of the royal moth family, with a wing-span of about five inches. The fore wings of the moth are olive colored, and the hind ones are orange red. Both are spotted with yellow.

Science News Letter, February 28, 1953

MARINE BIOLOGY

Lobster's "Ears" Tell Him Which Way Is Up

➤ SENSE ORGANS located at the base of a lobster's first antenna are not his "hearing ears," but function as a balancing mechanism, Dr. Theodore Bullock of the department of zoology at the University of California at Los Angeles and Dr. Y. Katsuki, visiting physiologist from Tokyo Medical-Dental University, have found.

"It has been speculated for some time that the sense organs located at the base of the lobster's first antenna were his hearing ears," said Dr. Bullock. "Our study shows that the ears' only function is as a balancing mechanism similar to that of the human inner ear."

Lobsters, however, are apparently not deaf mutes. There is evidence that they are able to pick up certain sounds through hairs on their shells that are very sensitive to vibrations.

They even seem to have a sort of mating call. There is some indication that they respond to a clucking noise caused by a waving of the large antenna.

Science News Letter, February 28, 1953

IN SCIEN

MEDICINE

Artery-Dilating Drug Tested in Toxemia

➤ A DRUG that lowers blood pressure and dilates blood vessels in kidney and brain is proving "very suitable for the management of toxemia of pregnancy," Dr. Nicholas S. Assali of the University of Cincinnati College of Medicine stated at the Obstetrical and Gynecological Assembly of Southern California meeting in Los Angeles.

The drug, a synthetic, is called apresoline. It has been undergoing tests at the Cincinnati institution for a year and a half.

For the last half century Cincinnati University doctors working at Cincinnati General Hospital have had what Dr. Assali described as singular success in reducing deaths from toxemia. Among other drugs used, veratrum preparations were found to be particularly effective.

Veratrum, root-extract of a lily-like plant, is an ancient drug in common use by American Indians, who sometimes chose their chieftain by determining how much veratrum he could take before becoming nauseated.

Only one woman has died at the Cincinnati hospital in two decades out of 215 treated for eclampsia, the most serious form of acute toxemia, Dr. Assali said. This record he believes is unequaled in the nation, where the average is 20 deaths out of every 215 eclamptic victims.

From their experiments to date, the Cincinnati researchers are of the opinion that apresoline may be equally effective for the management of toxemia, with an additional advantage over veratrum preparations. Apresoline does not nauseate the patient.

Science News Letter, February 28, 1953

PHYSICS

Rocket-Launched Balloon Aids Study of Weather

➤ A BALLOON that is launched from the nose of a high-flying Aerobee rocket has been developed to help the Army Signal Corps learn more about the weather.

Made of a paper-thin nylon webbing, the balloon is ejected from the rocket just before the missile begins to fall toward the earth. A cylinder of compressed air inflates the sphere.

By following the balloon with telescope and radar sets as it slowly drifts downward, Army meteorologists expect to obtain new and more accurate data on atmospheric conditions at extremely high altitudes. The balloon was designed by research engineers at Goodyear Tire & Rubber Company, Akron, Ohio.

Science News Letter, February 28, 1953

NE FIELDS

BIOCHEMISTRY

More Arthritis Drug From Mold Synthesis

➤ MORE AND cheaper Compound F, possible anti-arthritis drug related to cortisone, is foreseen from a new method of synthesizing it developed by Dr. Robert H. Levin and associates at the Upjohn Company's research laboratories, Kalamazoo, Mich.

The basic raw material used in the new process is the female hormone, progesterone, which can be prepared from animal or vegetable sources in virtually unlimited quantities. Present starting material for Compound F production is desoxycholic acid, from cattle bile. This is also used in manufacture of cortisone and is relatively scarce.

With the new method, progesterone and a mold are allowed to ferment for 24 to 48 hours in a specially prepared medium. From this Compound F is made by a many-step, intricate conversion process. The details of the process are reported in the *Journal of the American Chemical Society*.

Associated with Dr. Levin in the work were: Dr. B. J. Magerlein, Dr. A. V. McIntosh, Jr., Dr. A. R. Hanze, Dr. G. S. Fonken, J. L. Thompson, Miss Anna Mae Searcy, Miss Mary A. Scheri, and E. S. Gutsell.

Science News Letter, February 28, 1953

DENTISTRY

Dentists Honored for Service in Korean War

➤ FEW CIVILIANS, probably, have known that dentists as well as doctors and nurses have been risking their lives to serve our armed forces in Korea.

To honor these gallant men, and especially the 21 who have died in the service of their country, the Pierre Fauchard Academy, a service organization of dentists with headquarters in Minneapolis, on Feb. 6 presented its 1952 gold medal and diploma to the Assistant Surgeons General for Dentistry of the Army, the Navy and the Air Force, representing all dentists in the armed services. The presentation was made by Dr. P. C. Lowery, president of the Academy, at the annual meeting of the Academy and the Annual Midwestern Meeting of the Chicago Dental Society.

In making the award, Dr. Lowery said, in part:

"The Dental Profession can be justly proud of the record of the members of its profession who have served and are still serving in the Army, the Navy and the Air Force, regular and reserve. Their professional work has been of the finest and their scientific contributions and progress made in the military, as well as professional field, has made dentistry an indispensable part of a successful military operation."

The 7,500 dentists on active duty during 1952, serving 3,600,000 officers and men of all services, have, he said, performed an amount of preventive and corrective dentistry comparable to, if not in excess of, that performed during World War II. Figures for that war show dentists put in 104,000,000 permanent fillings in teeth of our Armed Forces, plus extracting 22,000,000 teeth, making 3,200,000 sets of false teeth, 124,000,000 examinations, diagnoses and other operations, and several million prophylactic treatments, repairs to dentures and fixed bridges.

Science News Letter, February 28, 1953

ORNITHOLOGY

Hummingbirds Take to Caves in Peru Nighttime

➤ HUMMINGBIRDS IN Peru have taken up cave-dwelling to avoid sudden drops of temperature that come with nighttime, reports Dr. Oliver O. Pearson of the Museum of Vertebrate Zoology, Berkeley, Calif.

Hummingbirds would literally starve to death through the night if they did not fall into a stupor, a sort of "suspended animation," so great is their rate of energy consumption. But in the Peruvian highlands, chances are that, with the extreme cold of night, they would never awaken from their deep sleep.

Nature's remedy for at least one mountain-living hummingbird, *Oreotrochilus estella*, is that the tiny bird has learned to sleep and nest in caves, crevices and mine tunnels where temperatures are almost constant around the clock, Dr. Pearson said.

Several other species of birds, including sparrow hawks, horned owls and a Bolivian goose, were found living in Peruvian caves, too, Dr. Pearson said in his report in *The Condor* (Jan.).

Science News Letter, February 28, 1953

MEDICINE

Bad Circulation in Toxemia of Pregnancy

➤ BLOOD SUPPLY to kidneys, brain and uterus is reduced in toxemia, the number one killer of pregnant women in the United States today, and cause of perhaps 30,000 infant deaths each year.

Proof for this reduction in blood supply, long believed to exist, has now been discovered in studies at the University of Cincinnati College of Medicine, Dr. Nicholas S. Assali, director of the University's obstetrical laboratory, reported to the Obstetrical and Gynecological Assembly of Southern California meeting in Los Angeles.

Cause of the reduced blood supply is a specific abnormality in the blood vessels which almost completely obstructs them, the Cincinnati scientists have found.

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TECHNOLOGY

New Washing Method Could Reduce Mold

➤ MOLDY STRAWBERRIES at market places could be much reduced using a new washing method developed in St. Louis. With a household-type synthetic detergent in the water, mold count on the fruit is up to one-half that of berries washed by the usual methods.

Because of their rough but soft surface, strawberries are among the most difficult fruits to clean and process.

The new technique was developed by Richard D. Haynes and Harriet Harlin of Monsanto Chemical Company, St. Louis, and J. Orvin Mundt and Roy Stokes of the University of Tennessee. The equipment gently forces the fruit up and down in the detergent solution while it travels the length of a new washer, now being patented.

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DENTISTRY

Buy Toothbrush For Baby's Layette

➤ NEXT TIME you want to buy a present for a new baby, get a small toothbrush instead of booties or mittens.

Baby will get enough of the latter articles anyway, and the toothbrush gift will mark you as an original and wise giver. And if mother is clever, she will include one in the layette she purchases.

Of course, baby will not use the toothbrush right away, even though an occasional infant is born with a tooth already coming through his gum. But the toothbrush can serve as a reminder to mother and father that baby's first teeth are important and should be taken care of.

The faulty belief that these so-called baby teeth are not important, because they fall out anyway, "has added immensely to the staggering toll of adult dental disease in the United States," the president of the American Dental Association, Dr. Otto W. Brandhorst of St. Louis, says.

"More than 90% of boys and girls have an advanced case of tooth decay by the age of 16 with an average of seven affected teeth each and more teeth are lost as the result of dental decay than from any other cause," Dr. Brandhorst says.

Loss of teeth prematurely in children can lead to poor mastication, diseased second teeth and facial disfiguration as remaining teeth shift and crowd out of position the erupting second teeth, he said.

First rule of dental health for children given by Dr. Brandhorst is proper use of the toothbrush immediately after eating. This, he says, is one of the most effective weapons against dental decay. By the age of three, this dental authority declares, the child should be taught to brush his teeth, or at least rinse out his mouth with water, within 10 minutes after eating.

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ASTRONOMY

Five Naked-Eye Planets

Venus, Mars, Jupiter, Mercury and Saturn, the only planets ever visible to the unaided eye, all can be seen next month. Sirius is brightest star of March evening skies.

By JAMES STOKLEY

➤ ALL FIVE of the planets that are ever visible to the naked eye will be seen during March evenings, although not simultaneously.

Most conspicuous of these is Venus, which is seen in the west and reaches its greatest brilliance, of magnitude minus 4.3 on the astronomical scale, on the evening of March 7. However, for the first part of the month the brightness will not change perceptibly as far as the eye can tell.

Venus is drawing near to the sun. On March 1, it sets more than three and one-half hours after sunset, but by the end of the month it follows the sun by less than two hours. By the middle of April it will be nearly in front of the sun and gone from the evening sky.

The planet Mars is in the same part of the sky as Venus, that is, the constellation of Pisces, the fishes, but with magnitude 1.5, it is less than a two-hundredth as bright. This still makes it equal to a bright second-magnitude star.

On the evening of March 17, Venus passes Mars, a little to the north. The crescent moon, two and a half days past new, will also be nearby, toward the east, having passed the two planets earlier, before they rose for American observers.

Mercury Seldom Observed

A little above Venus in the west, and about one-eleventh as bright, Jupiter shines in the constellation of Aries, the ram. At the first of March it sets a little after 11 p.m. and about an hour and a half earlier at the end.

These planets are all indicated on the accompanying maps, which show the appearance of the skies about 10:00 p.m., your own kind of standard time, on March 1, an hour earlier on the 15th and two hours earlier on the 31st.

However, Mercury will also make a brief appearance at the beginning of the month, but is not shown, because it sets before the time for which the maps are prepared. On March 2, Mercury will be farthest east of the sun and will set about an hour and a half after it.

Since it descends below the western horizon just as twilight is ending, it will not be seen against a fully dark background, but in the dusk. For several days around this date it should be possible to get a glimpse of Mercury, which is seldom observed.

Saturn, the fifth planet, shown toward the east in Virgo, the virgin, rises at the beginning of March about 9:30, just about when Venus is setting. By the end of the month it comes up a couple of hours earlier, about an hour after sunset. Of 0.5 magnitude, it is fainter than the other planets mentioned, with the exception of Mars.

Brightest star of the March evening skies is Sirius, in Canis Major, the great dog, toward the southwest. Above and right is Orion, the warrior, with Betelgeuse and Rigel, both of the first magnitude. Still higher is Aldebaran, in Taurus, the Bull.

Venus View May Surprise

Directly above this group are Gemini, the twins, with Pollux as the brightest star. To the right of Aldebaran is Auriga, the charioteer, in which Capella shines. Low in the east, near Saturn, is Spica, in Virgo, the virgin. Above this is Leo, the lion, with Regulus, while toward the left is Arcturus, in Bootes, the bear-driver.

Many college observatories have their public nights, and often groups of amateur astronomers provide their neighbors with a chance to look at the celestial objects with some optical aid. If they do so in March, it is likely that Venus will be one of the objects they show, greatly to the surprise of the viewers who see it for the first time. For at present Venus is seen in a crescent phase, like that of the moon when about five days past new.

Venus undergoes a complete cycle of changing phase, just as the moon does—and for the same reason. Like the earth and other planets, Venus has no light of its own, but shines by reflected sunlight. Its hemisphere turned toward the sun is bright, while the opposite one is dark.

Last June Venus was behind the sun, as viewed from the earth, and hence invisible. Then it moved to the east of the sun, remaining visible in the west after sunset, and thus began to appear in the west in the early evening. However, it was still far beyond the sun, so practically all of the sunlit hemisphere was visible, and through a telescope it looked like a complete circle.

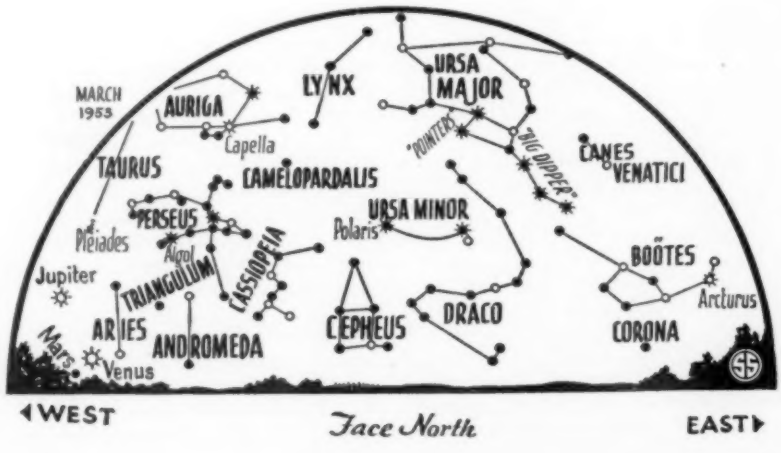
Then, around the beginning of 1953, it had moved to about the sun's distance from us, and was far to the east of that body. Through a telescope at that time, it would have appeared a semicircle, like the moon at quarter phase. Since then, the illuminated half has been turning away from us, so we have had a crescent phase, which will continue to get thinner and thinner until April 13, when the planet comes nearly between the earth and sun.

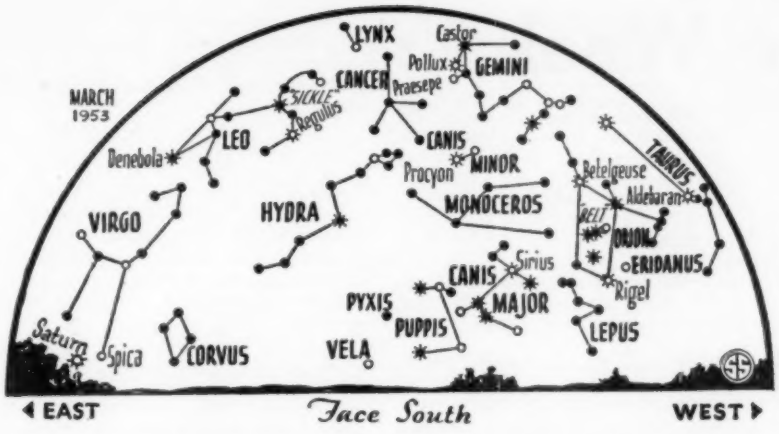
Unlike the moon, however, there is a change in size of Venus with the alteration in phase. All through the month, as the moon swings around the earth, it changes relatively little from its mean distance of about 240,000 miles.

Closest Planet Approach

Venus, on the other hand, was about 160,000,000 miles away when it first appeared last summer. On March 8, it will be 40,484,000 miles from us, so the circle of which its crescent forms part is much larger than the entire disk was last year. Thus its closeness much more than makes up for the fact that a large part of the illuminated part is not visible. With the moon, of course, the circle it presents in the sky changes very little in diameter, and it is brightest when full, that is, when we see all of the bright half.

On April 13, when Venus comes between the sun and the earth, it will only be 26,417,000 miles from us. This is closer than





☼ ✱ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

any other planet gets to the earth, and would be a good time to observe Venus, were it not for the fact that it is then practically in line with the sun.

Mars behaves quite differently, for since it revolves in an orbit that is outside the orbit of the earth, Mars comes closest to us when opposite the sun.

Celestial Time Table for March

March EST

2	3:00 a.m.	Mercury farthest east of sun, visible in evening just after sunset low in western sky around this date.
4	5:47 p.m.	Moon passes Saturn.
7	7:00 p.m.	Venus at greatest brilliancy.
8	2:42 a.m.	Algol (variable star in Perseus) at minimum brightness.
	1:26 p.m.	Moon in last quarter.
10	11:30 p.m.	Algol at minimum.
13	8:24 p.m.	Algol at minimum.
14	6:00 p.m.	Moon nearest, distance 222,100 miles.
15	6:05 a.m.	New moon.
16	5:12 p.m.	Algol at minimum.
17	2:58 p.m.	Moon passes Mars.
	3:06 p.m.	Moon passes Venus.
	6:00 p.m.	Venus passes Mars.
18	8:00 a.m.	Mercury between sun and earth.
19	1:08 a.m.	Moon passes Jupiter.
20	5:01 p.m.	Vernal equinox, sun directly over equator; spring begins in northern hemisphere, autumn in southern.
22	3:10 a.m.	Moon in first quarter.
27	1:00 p.m.	Moon farthest, distance 252,200 miles.
30	7:55 a.m.	Full moon.
31	1:18 a.m.	Algol at minimum.

Subtract one hour for CST, two hours for MST, and three for PST.

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INVENTION

Pliers Straighten Badly Bent Nails

▶ AMATEUR CARPENTERS will like a pair of pliers which straighten out bent nails. This pair of pliers, according to the inventor, will bring an "even acutely bent" nail back to a straight condition.

The pliers are constructed so that the bent nail will not fly out of the pliers during the operation. And, the inventor says, you cannot over-straighten the nail, thus bending it the other way.

One face of the nipping end of the pair of pliers has a groove to hold each end of the bent nail. The other face has a groove to hold the angle of the bent nail. The pliers are pressed together. Result, a straight nail. Patent number is 2,628,519 and inventor is Wilfred C. Hand, Mountainside, N. J.

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CHEMISTRY

Los Angeles' Sunshine May Be Factor in Smog

▶ LOS ANGELES has long boasted about its famous sunshine, but sunshine also may be a contributing factor to its notorious smog.

Thomas C. Hall, graduate research chemist at the University of California at Los Angeles, who is investigating a reaction that involves sunlight, nitrogen dioxide and hydrocarbons, believes this reaction may be the center of the smog problem.

Sunlight is absorbed by nitrogen dioxide molecules, activating them. The energetic molecules react with hydrocarbons. The products of this latter reaction may be the source of eye irritating toxicants.

In the laboratory this reaction has been reproduced for a controlled, detailed study. Ultraviolet light source represents the sun. Products of the nitrogen-dioxide-hydrocarbon reaction are carefully analyzed through the use of the mass spectrometer, an instrument that can measure infinitesimal amounts of gas mixtures. From this information some idea of the process whereby smog is produced may be obtained.

Mr. Hall's investigation is also related to rocket fuel studies. Nitrogen dioxide is included in such fuel and rocket experts are interested in the reaction of the substance to light and heat.

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

THE ADVANCEMENT OF SCIENCE, Vol. IX, No. 35—*British Association for the Advancement of Science*, 93 p., paper, six shillings. Papers on a variety of scientific subjects in the official journal of the British Association.

ANNUAL REPORT FOR 1952—Federal Civil Defense Administration—*Govt. Printing Office*, 138 p., illus., paper, 40 cents. The U. S. home front is far from ready to meet an all-out enemy attack, but it is measurably more ready than it was a year ago. Over 4,000,000 citizens are now in active civil defense services. (See p. 141.)

BEYOND HORIZONS: Voyages of Adventure and Discovery—Carleton Mitchell—*Norton*, 312 p., illus., $3.95. Chronicles of great and interesting sea voyages of the past, such as Anson's squadron rounding Cape Horn, the discovery of Tahiti, etc., are here retold in modern language.

CONTRIBUTIONS TO THE FLORA OF VENEZUELA: From Droseraceae through Umbelliferae—Julian A. Steyermark and others—*Chicago Natural History Museum*, 204 p., illus., paper, $4.00.

ECONOMICS OF NATURAL GAS IN TEXAS—John R. Stockton, Richard C. Henshaw, Jr., and Richard W. Graves—*Bureau of Business Research, University of Texas*, 316 p., illus., $5.00. Natural gas was first piped and put to practical use in China in or before 200 A.D. The first producing well in Texas dates from 1889. Now it has become the "wonder product and raw material of modern times.

ELEMENTS OF FOOD ENGINEERING, VOLUME I —Milton E. Parker, Ellery H. Harvey, and E. S. Stateler—*Reinhold*, 386 p., illus., $8.75. This college textbook deals with the design, construction and operation of plants for food processing.

ELEMENTS OF THE THEORY OF FUNCTIONS—Konrad Knopp, translated by Frederick Bagemihl—*Dover*, 140 p., paper $1.25, cloth $2.25. The first American edition of an important mathematical work.

FLYING SAUCERS—Donald H. Menzel—*Harvard University Press*, 319 p., illus., $4.75. "Flying saucers are real," this astronomer concludes, "as real as a rainbow and no more dangerous." The cause of most of the real saucers are to be found in the effects of mist, ice crystals or mirages, singly or jointly, he believes.

HUMAN RELATIONS: Concepts and Cases in Concrete Social Science—Volume I, Concepts—Hugh Cabot, Joseph A. Kahl and others—*Harvard University Press*, 333 p., illus., $4.75. Intended to serve the double purpose of a textbook for college classes in human relations and material for non-academic discussion groups.

HUMAN RELATIONS: Concepts and Cases in Concrete Social Science—Volume II, Cases—Hugh Cabot, Joseph A. Kahl and others—*Harvard University Press*, 273 p., $4.25. Case material or "raw" facts of difficulties in human relations which can test the ideas presented in Volume I. Food for thought for the individual reader or for discussion in groups.

INK AND PAPER IN THE PRINTING PROCESS—Andries Voet—*Interscience*, 213 p., illus., $5.90. An introduction to the physics and chemistry of ink and its interaction with paper in the major printing processes. For students of the graphic arts with basic understanding of science.

INTERRACIAL PRACTICES IN THE YMCA: A Guide for Officers and Leaders of Local YMCA's —National Study Commission on Interracial Practices in the YMCA—*Association Press*, 48 p., paper, $1.00. The YMCA, this bulletin states, has not been satisfied with theories of interracial justice and brotherhood, but has been putting these theories into practice.

THE JOURNAL OF HISTOCHEMISTRY AND CYTOCHEMISTRY: Official Journal of the Histochemical Society, Volume 1, Number 1, R. D. Lillie, Ed.—*Williams and Wilkins*, 86 p., illus., paper, $7.00 per volume, single copies $1.50. Published six times a year and devoted to original and review articles in the field.

LATIN AMERICA IN THE COLD WAR—Walter M. Daniels, Ed.—*Wilson*, 206 p., $1.75. This collection of newspaper and periodical articles tells how the "Cold War" has affected Latin America, and how U. S. preoccupation with Europe and Asia has given rise to anti-democratic elements in the Western Hemisphere.

LECTURES ON CAUCHY'S PROBLEM IN LINEAR PARTIAL DIFFERENTIAL EQUATIONS — Jacques Hadamard—*Dover*, 316 p., paper $1.70, cloth $3.50. A reprint for students of an edition originally published in 1923 by Yale University.

LIBERATORS AND HEROES OF THE WEST INDIAN ISLANDS—Marion F. Lansing—*Page*, 294 p., illus., $4.00. To introduce to Americans some of the important and colorful characters in the history of our neighbors to the south.

MECHANICS OF ELASTIC PERFORMANCE OF TEXTILE MATERIALS—GRAPHICAL ANALYSIS OF FABRIC GEOMETRY—E. V. Painter—*Office of Technical Services*, 29 p., paper, $1.00. Graphs and time-saving design procedure to enable textile manufacturers to design better fabrics.

METHOD OF CONVERTING HEAVY MOTOR VEHICLE LOADS INTO EQUIVALENT DESIGN LOADS ON THE BASIS OF MAXIMUM BENDING MOVEMENTS—Henson K. Stephenson and Kriss Cloninger, Jr.—*Texas Engineering Experiment Station*, 568 p., paper, $3.00. Information fundamental to the planning of bridges and other highway structures.

OOLAK'S BROTHER—Bud Helmericks—*Little, Brown*, 144 p., illus., $2.75. This story tells children how they would live if they were to share the home of an Eskimo family near the North Pole.

PHYSIOLOGY OF SEEDS: An Introduction to the Experimental Study of Seed and Germination Problems—William V. Crocker and Lela V. Barton—*Chronica Botanica*, 267 p., illus., $6.50. Written from the viewpoint of the investigator of seed problems, this book points out recent progress in seed technology and develops the relation of established knowledge to unsolved problems.

RESEARCH FOR INDUSTRY: Molded Products and Coatings—*Franklin Institute Laboratories for Research and Development*, 16 p., illus., paper, free upon request direct to publisher, Benjamin Franklin Park at 20th Street, Philadelphia 3, Pa. Describing the kinds of research the Institute is prepared to do for industry.

SCIENTIFIC TERMINOLOGY—John N. Hough—*Rinehart*, 231 p., $3.50. Intended to serve as textbook, especially for pre-medical and pre-biology students, and as a general reference book for the home bookshelf, the book provides an understanding of the structure and origin of words that will make scientific and medical terms meaningful even when first encountered.

THE SECOND SEX—Simone de Beauvoir, translated and edited by H. M. Parshley—*Knopf*, 732 p., $10.00. An associate of Jean-Paul Sartre, and a French intellectual leader, the author presents not only the biology of sex but woman's place in history, mythology and modern society.

A STUDY OF INDIAN BEADWORK OF THE NORTH CENTRAL PLAINS: Indian Leaflets No. 5-6-7—*Science Museum*, 3 p., illus., paper, 50 cents. With the aid of these charts based on specimens collected by experienced anthropologists, it is possible to identify and date any particular piece of Indian bead work.

TV MANUFACTURERS' RECEIVER TROUBLE CURES, VOLUME I—Milton S. Snitzer, Ed.—*Rider*, 115 p., illus., paper, $1.80. The makers provide hints on how to make their television sets work better under certain difficult conditions. Covering models from Admiral to Dumont.

THE THEORY OF ELECTRONS: And Its Applications to the Phenomena of Light and Radiant Heat—H. A. Lorentz—*Dover*, 2d ed., 343 p., paper $1.70, cloth $3.50. An unabridged student's edition of a long out-of-print classic originally published in 1906.

THE WONDERFUL WORLD OF BOOKS—Alfred Stefferud, Ed.—*New American Library*, 319 p., illus., paper, 35 cents. This book, a joint publication with Houghton-Mifflin, is an outgrowth of the USDA Conference on Rural Reading and reproduces some of the papers delivered there. It will help busy people to find time to read, to make wise selections of books and to enjoy literature.

ZOOGEOGRAPHY OF THE SEA—Sven Ekman, translated by Elizabeth Palmer—*Sidgwick and Jackson (Macmillan)*, 417 p., illus., $6.50. Showing the distribution of marine animals and the interaction between the physiology of the various creatures with their external environment. Considerably revised for the English edition.

GENERAL SCIENCE

Civil Defense Assumes Soviets Have 67 A-Bombs

▶ WHILE FORMER President Truman doubts that Soviet Russia has yet mastered the mechanism of a fully completed A-bomb, while President Eisenhower announces that it is certain the Russians have A-bombs, the Federal Civil Defense Administration is "assuming" that they have at least 67 A-bombs.

For civil defense planning purposes, at least, the FCDA assumes that the Soviets can now send over a 400-plane raid which can deliver at least one A-bomb to each of the 67 critical target areas in the United States. These A-bombs, the agency assumes, will be two and one-half times the strength of the Hiroshima bomb, or about the equivalent of 50,000 tons of TNT.

Though it is said that this assumption is made on the basis of security information and military intelligence, the agency also says: "It must be realized that the total number of bombs involved in the assumption has no connection with estimates of the Soviet bomb stockpile at any given date."

The 67 target areas contain 89 major cities, nearly half the American population and more than half the production facilities of the nation. If they were all hit at once, a top possibility of 11,000,000 killed and wounded can be assumed, the FCDA estimated.

All these assumptions appear in the agency's annual report to the President and Congress. (See p. 140.)

Science News Letter, February 28, 1953

PEDIATRICS

Child Cancer Research Supported in Mexico

▶ A GRANT of $21,000 for three years research in the field of child cancer has been granted to Dr. Alejandro Aguirre of the Hospital Infantil, Mexico City, by Playtex Park Research Institute, New York.

This is the first pediatric research grant, so far as known, made for work in Mexico by any group outside of Mexico.

Presentation was made by Dr. Federico Gomez, director of the Hospital Infantil and newly elected member of the board of the Institute, at a banquet in Mexico City at which the president of Mexico and Dona Ruiz Cortinez, his wife, were present.

Science News Letter, February 28, 1953

MEDICINE

Radiation Protection

➤ BETTER PROTECTION against ionizing radiation, whether from atomic bombs or the X-rays used in treatment of disease, may come from the metal, cobalt.

When fed to white mice for several days before and after irradiation of their entire bodies, this metal cut the mortality rate over a 30-day period by more than half, Drs. W. Parr, T. O'Neill and A. Krebs of the Army Medical Research Laboratory, Fort Knox, Ky., find.

These scientists tried the anti-irradiation effects of cobalt because it is generally believed that the key to recovery after irradiation damage is the ability of the body to form new blood. Cobalt is known to have a stimulating effect on the blood-forming system of the body. It is contained in the anti-anemia vitamin B-12.

Cobalt has other effects which may account for its anti-irradiation power, the Army scientists point out in *Science* (Feb. 13).

It interferes with the breathing of cells and produces an oxygen lack in them. Lack or deficiency of oxygen has been reported to increase resistance against irradiation damage.

Cobalt may block the important sulfhydryl chemical groups and perhaps other chemical groups necessary for many body chemical processes.

Which of these effects or whether all of them together account for the cobalt protection remains to be investigated, the scientists point out.

The cobalt they used to protect their mice was in the form of a cobalt chloride solution mixed with the ordinary laboratory fare of the animals.

If cobalt can protect against radiation damage, it will make this metal triply useful to humans, since besides its anti-anemia activity it can, when made radioactive in the atomic pile, help fight cancer.

Science News Letter, February 28, 1953

NUTRITION

Check Toddler's Eating

➤ MOTHERS SHOULD watch carefully the diet of the toddler. The child at this age, from one to three years, is a slow and untidy eater, mother knows well.

In her effort to teach him to use spoon, cup and other utensils better and more neatly, and with her attention also, perhaps, given to older children and a new baby, she may not pay enough attention to what the toddler eats.

At this age, the child is learning to chew, and he chews poorly compared to older children, Dr. Genevieve Stearns of the University of Iowa pointed out at the U. S. Department of Agriculture conference on nutrition. As a result, his meal is apt to consist of the foods he can manage with a spoon or eat from his hand.

If left to fend for himself, the mainstays of his diet, she has observed, often are potatoes and gravy, bread and butter. This means that his fare is poor in protein and too rich in carbohydrates.

Yet in these early years the child's need for protein is as great as during infancy. This is a period of changing body composition though of slow growth, as far as outward appearance is concerned. The muscles are growing far more rapidly than the rest of the body—or should be, if the child gets enough protein in his food.

He is changing from the infant whose locomotion depends on others to a child taking an upright position and moving about by himself—and this is a great change. At this age the skeletal muscles should increase by about a third. But, says Dr. Stearns, all too often there is little or no increase, and the result is a child with habitual fatigue posture and little energy.

Science News Letter, February 28, 1953

INVENTION

Optical Lenses Made From Titanium Glass

➤ LENSES FOR special telescopes and other optical instruments will be made of a titanium compound, an invention now patented promises.

This substitute for glass is strontium titanate, and it possesses refractive and dispersion qualities very different from ordinary glass. The inventors are Leon Merker, New York, and Langtry E. Lynd, South Plainfield, N. J., and they have assigned their patent, number 2,628,156, to the National Lead Company, New York.

The lenses are made of a monocrystalline mass of the compound, which is prepared at temperatures of 2,100 degrees Centigrade. An oxygen-hydrogen torch is used to achieve these high temperatures.

A lens made from strontium titanate has a very high refractive index, as compared with flint glass and crown glass lenses, and a very low reciprocal relative dispersion. The inventors say it will be particularly useful for telescopic and microscopic objectives, achromatic lenses and prisms, and for other optical purposes which advantageously utilize wide fields, high apertures and short focal lengths.

Science News Letter, February 28, 1953

MEDICINE

Cortisone Helps Painful Thyroids

➤ CORTISONE, FAMOUS as an anti-arthritis drug, is now recommended for treatment of painful thyroid gland inflammation. The recommendation comes from Drs. Dwight E. Clark, Thomas S. Nelsen and Robert J. Raiman of the University of Chicago and is based on good results in three cases they report in the *Journal of the American Medical Association* (Feb. 14).

The drug is given in small daily doses for 12 to 14 days. Pain is relieved within 24 hours and within the first week the swollen, hard gland in each case had become smaller and softer. In all cases the gland returned to normal size and consistency within two months and there have been no recurrences.

Previous treatment for this condition has included anti-thyroid drugs, surgery, antibiotics and X-rays. An infection of some kind is believed the cause of the condition.

Science News Letter, February 28, 1953

Do You Know?

The *ferret* is a domesticated kind of polecat.

Balloons used in recent scientific experiments were about as high as a 10-story building.

Adequate *protein* in the diet of the school-age child increases his resistance to infection of many diseases.

The U. S. Air Force is using fruit flies in a stratospheric research project to study the effects of *cosmic rays* at very high altitudes.

Ocean currents flowing 10.92 miles an hour were recently measured in the Gulf Stream 15 miles from Miami; this is the fastest current yet reported.

ENTOMOLOGY

Insect Fifth Column

▶ WARFARE AGAINST insect pests, which cause $4,000,000,000 worth of damage to crops and livestock in the United States each year, hit new strides in 1952, said the U. S. Bureau of Entomology and Plant Quarantine in its annual report.

Greater use of an insect "fifth column" is leading to better control over insect and plant pests, the bureau said. Insect predators, imported for the job from Australia, have cleared more than 100,000 acres of land in California of Klamath weed, a plant that crowds out desirable forage grass.

To control insect pests before they have a chance to strike United States crops, the bureau has established insect parasites of the citrus blackfly in Mexico. The blackfly has caused great damage to Mexican citrus, the bureau said, and the importation of the parasite from India promises to help control the pest before it can infest orchards in the United States.

A similar attempt to halt insect pests before they can become introduced into the United States is an inspection service, supervised by the entomology bureau, operating in Holland to examine flower bulbs there before they are imported into this country.

The Bureau of Entomology and Plant Quarantine has continued experiments with insecticides and their effects on soil, crops and livestock. Studies on "systemic insecticides," insect poisons taken into the sap of a plant to kill the insect that bites it, show much progress, the bureau said.

The quarantine division of the bureau intercepted 56,000 lots of unauthorized airborne plants and plant products during the year. Much of the material carried insect pests and plant diseases, including notoriously destructive forms such as the oriental fruit fly, the citrus blackfly and the pink bollworm, the bureau said.

Besides the interceptions of airborne pests, more than 109,000 lots of restricted or prohibited plant material were stopped at ports of entry into the United States during the year.

Science News Letter, February 28, 1953

MEDICINE

Skin Disorder Relieved

▶ A YOUNG man who suffered an itchy, scaling skin disorder for 19 of his 29 years has gotten more relief through an ointment of hydrocortisone acetate than from any other medicine put on his inflamed skin, and is in better condition than at any time since the skin condition started.

He is one of 20 patients who got "eminently satisfactory results" from this ointment containing a relative of the famous arthritis remedy, cortisone.

Results of this treatment in 62 patients with various skin disorders are reported by Drs. Marion B. Sulzberger and Victor H. Witten of New York and Dr. C. Conrad Smith of Augusta, Ga., in the *Journal of the American Medical Association* (Feb. 7).

Of the 62 patients, 30 had the same skin condition, called atopic dermatitis, as the young man. Seven were not helped and three improved but the doctors are not sure whether the improvement was due to the hydrocortisone acetate. The young man's case is considered noteworthy not only because of the results but because he had not improved when getting large doses of cortisone by mouth every day.

The ointment was of no value, the doctors found, in psoriasis, chronic discoid lupus erythematosus, pemphigus vulgaris and alopecia areata.

In cases which were helped, the good effects came within 48 hours to one week after starting treatment. When use of the ointment was stopped, the effects usually wore off after four to five days. There were no signs of any adverse effects and only small amounts of the drug are needed.

The ointment does not stain skin or clothing, does not generally sting or burn and does not have a disagreeable odor.

The doctors call this hydrocortisone, or Compound F, ointment an adjunct or aid in treatment of skin disorders but do not call it a cure. It is available only on doctor's prescription. Further studies to determine how it works are planned.

Science News Letter, February 28, 1953

The checkerberry is one of America's smallest native *shrubs*.

Licorice and its by-products are widely used in breakfast cereal, to mellow smoking pipes, to pickle sheet metal and as a foaming agent in beer.

Questions

ARCHAEOLOGY—For how many years have scientists been searching for remains of Folsom Man? p. 133.

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ASTRONOMY—Which planet comes closest to the earth? p. 138.

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CHEMISTRY—How could sunshine help make Los Angeles' smog? p. 139.

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DENTISTRY—Why is a toothbrush a good buy for baby's layette? p. 137.

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GENERAL SCIENCE—How many Russian scientific journals can now be purchased in the U. S.? p. 133.

What number of A-bombs does the Federal Civil Defense Agency "assume" Russia has? p. 141.

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NUTRITION—Into how many classes is beef graded? p. 134.

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PUBLIC HEALTH—What is the danger of smuggling parrots and their relatives into the U. S.? p. 135.

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Photographs: Cover, George A. Smith; p. 131, U. S. Navy; p. 133, Drake America Corp.; p. 135, United Aircraft Corp.; p. 144, Ariens Company.

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N ST., Washington 6, D. C., and ask for Gadget Bulletin 663. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

ACETATE INKS for writing on plastics have non-fading qualities in either opaque- or transparent-color varieties. Both permanent and "removable" inks are available. The inks work in ruling pens, lettering pens, brushes and airbrushes, and can be used to label plastic price tags and to identify photographic negatives.

Science News Letter, February 28, 1953

"STRETCHLESS" CLOTHESLINE has a synthetic-yarn core covered with braided cotton. The line can be strung tautly and is said not to stretch more than two percent. when fully loaded with wet clothes.

Science News Letter, February 28, 1953

FILM DEVELOPING tank for amateur photographers features a "self-loading" reel that reduces fumble in the darkroom. The reel flanges can be twisted through a small angle. When film has been started into the grooves, the back-and-forth twisting motion threads the film automatically onto the reel. The tank accommodates all roll film sizes from 35mm to 116mm.

Science News Letter, February 28, 1953

GARDEN TILLER for the home is powered by a gasoline engine and tills earth up to six inches deep in foot-wide strips, making an aerated, level, spongy seedbed that needs no hard spadework. A rotary snow plow attachment clears heavy or light

snow from sidewalks and driveways, throwing it 15 feet from the cleared path. The equipment is shown in the photograph.

Science News Letter, February 28, 1953

IRON-SUPPLYING COMPOUND for citrus trees re-greens, stimulates growth and improves the fruit in a matter of months if the trees are "sick" because of an iron deficiency of the soil. The chemical now is being used commercially on citrus trees, avocados and gladioli, and is being tried experimentally on some vegetables, flowers, lawns and golf greens.

Science News Letter, February 28, 1953

ELECTRIC TRAVEL iron weighs only one and a half pounds and has a "dial-the-fabric" heat control. Designed for both right- and left-handed persons, the iron's handle folds down when the iron is not in use, allowing the iron to slip into a small, neat carrying case.

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AIR CONDITIONER for the home cools six- to eight-room houses equipped with forced-air heating systems. Usually placed near the furnace, the device is attached to the existing ductwork and is thermostatically controlled. Soon to be put on the market, the unit also dehumidifies and filters the air.

Science News Letter, February 28, 1953

SPRAY FOR mops and dust cloths helps the housewife finish her dusting chores in short order. The treated mop or cloth is said to pick up dust better than untreated mops or cloths, and to convert the dust into heavy lint particles that can be shaken off easily and neatly into a newspaper.

Science News Letter, February 28, 1953

• Nature Ramblings •

➤ THOUSANDS OF gray whales are moving along the California coast in their annual winter migration to breeding grounds in Lower California bays, the U. S. Fish and Wildlife Service recently reported.

The gray whales, which grow to an average length of 40 feet, travel close to shore during the migration from the North Pacific. Observers on the beach take a whale "census" by counting the oceanic mammals as they come to the surface to breathe.

Whalers used to slaughter the gray whales by the hundreds in their confined calving areas in Lower California bays, so that they were almost threatened with extinction. Now the whales are protected by law, and they have increased their numbers tremendously.

The slate-colored gray whale is one of the smallest whales. The blue or sulfur-bottom whale reaches a maximum length of 106 feet and weight of over 100 tons.

Whales

Whales are mammals with a fish-like form, and like other mammals, breathe air and must hold their breath when below the surface of the water. They must spend, therefore, much time at the surface, where they may be counted.

Dr. Raymond M. Gilmore, one of the country's few experts on whales and whaling, recently took up his Fish and Wildlife Service post at the Scripps Institution of Oceanography, La Jolla, Calif., in partial fulfillment of the United States' responsibilities as a member of the International Whaling Convention for the conservation of whales.

The once great American whaling industry—100 years ago over 700 whaling ships involving an investment of $40,000,000 were engaged in the business—is temporarily dormant because of a lack of demand for the products. The business may be revived because the flesh of whales is similar to beef in flavor and texture, and is extensively used for food in Japan, as well as in several European countries, and has recently been introduced in the United States. It was once estimated that one whale could produce as much meat as a herd of 100 cattle.

Science News Letter, February 28, 1953